ENGINEERING EVALUATION REPORT
PG&E COMPANY HUNTERS POINT POWER PLANT
PLANT NUMBER 24
APPLICATION NUMBER 12482

INTRODUCTION

This application is to bank Interchangeable Emission Reduction Credits (IERCs), in accordance with District Regulation 2, Rule 9, from the source below at PG&E Co.'s Hunters Point Power Plant in San Francisco, CA.

S-7 Boiler No. 7 Electric Generation, Combustion Engineering Boiler, 1720 MMBtu/hr heat input

The District previously approved IERCs for this boiler under application numbers 22504 and 7375. Those applications included four IERC credit generation periods (CGP_1, CGP_2, CGP_3 and CGP_4) for the period January 1, 1997 through December 31, 2000. This new banking application is for one additional credit generation period (CGP):

CGP_5 January 1, 2001 through December 31, 2001

S-7 is subject to Regulation 9, Rule 11, which limits NOx emissions from electric power generating steam boilers. Specifically, this source has been part of an Advanced Technology Alternative Emission Control Plan (ATAECP) pursuant to Section 9-11-309, for sources under common ownership. Under an ATAECP, an individual source is not required to meet a specific NOx emission limit. Rather, all sources under the ATAECP are limited to a system-wide average NOx emission rate. For the previous IERC banking application, the ATAECP included source S-7 and also sources S-3 through S-6 at Hunters Point. Sources S-3 through S-6 were permanently shut down in 2000, so those sources are no longer a part of the ATAECP. Consequently, source S-7 is the only remaining source under the ATAECP. For the calendar year 2001 or CGP_5, the system-wide NOx limit was 0.105 pounds of NOx emissions per million BTU of heat input (lb NOx/MM BTU).

The reduction in NOx emissions for which PG&E can bank IERCs, are due to the use of lower emitting combustion practices. These include:

1. Modification of the gas burner rings for staged combustion. This technique creates an increase in the combustion gas residence time in fuel rich zones, reducing the formation of NOx.
2. Biased firing of burners to achieve fuel-rich and air-rich zones. Therefore primary combustion can occur at a lower flame temperature (fuel-rich zone) and the secondary combustion can occur at lower bulk gas temperature (air-rich zone) to minimize NOx formation.
3. Routing flue gas to the forced draft inlets for better flue gas-combustion air mixing.
4. Installation of an oxygen trim system for optimal excess air operation.
5. Installation of new gas recirculation fans and motors.
6. Installation of new oxygen and gas flow measuring instruments.
7. Installation of new flue gas ducts.
8. Improved operating procedures and training of Operations and Maintenance personnel.

IERC CALCULATIONS

The procedure for calculating IERCs is described in Regulation 2, Rule 9, Sections 602 and 603. The following IERC calculations are based on hourly NOx emissions and heat input data provided by PG&E. Because this application is for additional credit generation periods for a particular emission reduction activity at a source that has previously generated IERCs, the baseline for this application is the same baseline that was used in the previous IERC applications for PG&E (Application Numbers 22504 & 7375).

Determine Baseline Period:
The baseline period for S-7 was determined for PG&E's original IERC banking application number 22504. Per Regulation 2, Rule 9, Section 602 (Reg. 2-9-602.1), the baseline period for a source is the 5-year period immediately preceding the initial credit generation period. The initial credit generation period, CGP_1 (where the subscript "1" represents the first credit generation period), is determined by the completion date of the *first* IERC banking application. PG&E's IERC banking application number 22504 was deemed complete on June 7, 1999. Per Reg. 2-9-204, the initial credit generation period "shall not be more than 30 months prior to the submittal of the first complete IERC banking application for a particular emission reduction activity". The baseline and initial credit generation period satisfy the requirements of Section 2-9-204.

The baseline period and credit generation periods (CGPs) for S-7 are summarized below.

Baseline:	Jan. 1, 1992 – Dec. 31, 1996
CGP_1	Jan. 1, 1997 – Dec. 31, 1997 (AN 22504; IERCs surrendered per Settlement Agreement)
CGP_2	Jan. 1, 1998 – Dec. 31, 1998 (AN 22504; IERCs surrendered per Settlement Agreement)
CGP_3	Jan. 1, 1999 – Dec. 31, 1999 (AN 22504; IERCs partially surrendered per Settlement Agreement)
CGP_4	Jan. 1, 2000 – Dec. 31, 2000 (AN 7375)
CGP_5	Jan. 1, 2001 – Dec. 31, 2001 (currently under review)

Determine Baseline Throughput:
Baseline throughput is the lesser of actual throughput or permitted throughput during the baseline period. There were no permit conditions limiting fuel usage for S-7 during the baseline period. Therefore, the baseline throughput is the actual fuel usage reported by PG&E. The data to determine the baseline throughput for S-7 is found in Appendix A of AN 22504.

Calendar Year	*Natural Gas Input, MMBtu/yr*	*Oil Input, MMBtu/yr*	*Total Input, MMBtu/yr*
1992	10,012,892	7,188	10,020,080
1993	6,293,970	33,725	6,327,695
1994	9,076,731	1,770,975	10,847,706
1995	8,419,826	0	8,419,826
1996	7,609,103	0	7,609,103
Total	41,412,522	1,811,888	43,224,410

The gas and oil throughput data for the Hunters Point Power Plant were summarized from EPA data groups of the CEM (Continuous Emission Monitor) computers, which use hourly averages based on 15-minute averages. The raw CEM data can be accessed at the EPA website. Appendix A of AN 22504 contains the data summaries. The CEMs are regularly source tested to verify compliance with the District Regulation 1-522.6 that requires accuracy within 5% of CEM full scale or 10% of applicable emission standard.

Determine Baseline Emissions & Baseline Emission Rate:
Baseline emissions are the actual NOx emissions that occurred during the baseline period. The NOx emissions from S-7 were measured by a CEM. As mentioned above, raw CEM data can be accessed at the EPA website. The average annual emission rates calculated from EPA data groups are summarized below. Emissions and fuel data can be found in Appendix A of AN 22504.

Calendar Year	*Natural Gas Emissions, ton/yr*	*Natural Gas Emission Factor, lb/MMBtu*	*Oil Emissions, ton/yr*	*Oil Emission Factor, lb/MMBtu*
1992	678.93	0.1356	2.05	0.5704
1993	419.73	0.1334	2.44	0.1447
1994	551.79	0.1216	452.17	0.5106
1995	502	0.1192	0	NA
1996	450.2	0.1183	0	NA
Total	2,602.65 tons		456.66 tons	

However, under the ATAECP, oil firing is not allowed under Regulation 9-11-309. Therefore the emissions from oil firing must be adjusted to the levels that would have occurred if natural gas had been fired instead of oil by using the applicable gas emission factor.

1992: 0.1356 lb/MMBtu X 7,188 MMBtu	= 975 lb	= 0.49 tons
1993: 0.1334 lb/MMBtu X 33,725 MMBtu	= 4,499 lb	= 2.25 tons
1994: 0.1216 lb/MMBtu X 1,770,975 MMBtu	= 215,351 lb	= 107.68 tons
	Total	= 110.42 tons

Total Emissions = 2,602.65 ton + 110.42 ton = 2,713.07 tons

The ***baseline emission rate*** is calculated by dividing the baseline emission by the baseline throughput.

(2,713.07 tons) (2000 lb/ton) /(43,224,410 MMBtu) = ***0.1255 lb NOx/MM BTU***

Determine the Baseline-Adjusted Emissions (A):
The District cannot approve IERCs for an emission reduction that is required by a District rule, RACT, BARCT, etc. during a given credit generation period. To prevent this, the baseline emission rate must be adjusted (reduced) to reflect any rule or provision that is in effect during the credit generation period. Since requirements may change over time, it is possible to have different baseline adjusted emission rates for different credit generation periods.

The baseline emission rate calculated above is 0.1255 lb NOx/MM BTU. However, source S-7 was subject to system-wide NOx emission rate limits of 0.105 lb/MM BTU for the calendar year 2001 per Reg. 9-11-309. Because the system-wide NOx limits in Reg. 9-11-309 are less than the actual baseline emission rate, the baseline emission rate must be reduced to the Reg. 9-11 limits.

The baseline-adjusted emission rate is:

0.105 lb/MM BTU for CGP_5 (2001)

The baseline-adjusted emissions are calculated by multiplying the *baseline adjusted emission rate* by the *baseline throughput* and by the *duration* of the CGP. The baseline-adjusted emissions (A_x where x represents the CGP number) are:

$\boldsymbol{A_5}$ = (1 year) (0.105 lb/MM BTU) (8,644,882 MM BTU/yr) / (2000 lb/ton)
= ***453.86 tons NOx***

Determine the Actual Emissions (B) During the Credit Generation Period:
PG&E provided spreadsheets containing heat input and NOx emission data for S-7. Total NOx emissions for the CGP were determined by totaling all of the hourly NOx emissions for the entire CGP. Total heat input was determined the same way. The emission rate for the CGP was calculated by dividing total NOx emissions by the total heat input. A summary of the monthly heat input and NOx emissions for the year 2001 is in the spreadsheet attached to this evaluation report.

CGP	*Total NOx Emissions, lb*	*Total Heat Input, MMBtu*	*Emission Rate, lb/MMBtu*
CGP_5	339,934	4,461,830	0.0762

From the table above, actual emissions (B) for CGP_5 are:

$\boldsymbol{B_5}$ = 339,934 lb x (ton/2000 lb) ***= 170.0 tons***

Determine Credit Generation Period Non-Curtailment Emissions (C):
The non-curtailment emissions (C) are calculated by multiplying the baseline throughput by the emission rate (lb NOx / MM BTU) and the duration of the CGP. The baseline throughput was 8,644,882 MM BTU/yr. The emissions rate for the CGP is in the table above.

C_5 = (8,644,882 MM BTU/yr) (0.0762 lb/MM BTU) (1 year) / (2000 lb/ton)
= ***329.37 tons***

Calculate IERCs for the Credit Generation Period:
IERCs are calculated by subtracting the greater of either the actual emissions (B) or the non-curtailment emissions (C) from the baseline emissions (A). For CGP_5, the non-curtailment emissions are greater than the actual emissions.

CGP_5: **IERCs** = $A_5 - C_5$ = 453.86 tons – 329.37 tons = **124.49 tons of NOx**

STATEMENT OF COMPLIANCE

For an emission reduction to be banked as an IERC, the reduction must be real, permanent, quantifiable, enforceable and surplus (Section 2-1-301.2).

Real: The emission reductions evaluated in this application are real. There was an actual decrease in emissions to the atmosphere, as is evident from continuous emission monitoring (CEM) data.

Permanent: As defined in Section 2-9-213, permanent means that the emission reduction exists for the duration of the credit generation period (CGP). Since all of the CGPs in this application have already ended, the emission reductions have already occurred, and therefore, are permanent.

Quantifiable: These emission reductions are quantifiable. The emission calculations were performed using NOx CEM data and heat input records.

Enforceable: As defined in Section 2-9-209, enforceable means that there is credible evidence during the credit generation periods to verify compliance with Regulation 2, Rule 9. The evaluation of this banking application is based on NOx CEM data and heat input. The District periodically tests this CEM for accuracy. Based on these Field Accuracy Tests, the NOx CEM is operating properly.

Surplus: As defined in Section 2-9-218, surplus means that the emission reductions are not required by Reasonably Available Control Technology (RACT), Best Available Retrofit Control Technology (BARCT), or any other rule in effect during the credit generation period. In addition, emissions reductions must exceed any reduction required by the most recent Clean Air Plan or Air Quality Management Plan.

The District's most recently adopted plan is the 2001 Ozone Attainment Plan (OAP). This OAP contains an emission inventory for the year 2001, and projected emission inventories for subsequent years broken out by source category. To determine whether or not the IERCs requested by PG&E are surplus to the OAP, staff compared the 2001 emission inventory with actual emissions, ERC usage, and IERC usage in 2001. This was done for all facilities that have generated or used IERCs to date. The 2001 emission inventory exceeded the sum of actual emissions plus ERC and IERC usage. Therefore, the IERCs requested in this application are surplus.

Regulation 9, Rule 11, Section 309 contains NOx emission rate limits that were applicable to this source during the credit generation period. The original baseline emissions for this IERC banking application were reduced based on this NOx emission rate limit. See the above discussion regarding *baseline-adjusted emissions.*

PUBLIC COMMENT

The amount of IERCs for the CGP exceeds 40 tons. Therefore, this application is subject to the public comment provisions of Section 2-9-405. Before approving this banking application, the District must publish a notification of the preliminary decision to approve the IERCs. Following publication, there will be a 30-day public comment period, during which the District will accept written comments.

TOXIC RISK SCREENING ANALYSIS

There is no net increase in emissions of toxic compounds that will result from this IERC banking application. Therefore, a Toxic Risk Screening Analysis is not required.

CEQA

The District will issue a Notice of Exemption for this application. Pursuant to Regulation 2-1-312.10, review of this application to bank emission reductions pursuant to Regulation 2, Rule 9 is exempt from CEQA review because it can been seen with clarity that review and approval of such applications have no potential for causing a significant environmental impact.

RECOMENDATION

Staff recommends the District issue a Notice of Exemption for CEQA and a preliminary decision to approve the following IERCs for emission reductions that occurred at PG&E Hunters Point Power Plant.

IERC Banking Certificate #7-F 124.49 Tons of Nitrogen Oxides

Source #	Baseline Period	Credit Generation Period #5
S-7, Boiler No. 7	1/1/92 – 12/31/96	1/1/01 – 12/31/01

Effective Date: **January 1, 2002**
Expiration Date: **December 31, 2006**

By: Greg Stone
Supervising Air Quality Engineer

June 21, 2005

PG&E Co., Hunters Point Power Plant
Monthly Summary of NOx and Heat Input
Application Number 12482

CGP#5: January 1, 2001 through December 31, 2001

	NOx lb	Heat MMBtu
January	102708.6	1063822.1
February	53753.95	650719.4
March	2165.599	27623.8
April	34601.32	435683
May	49718.65	631428.7
June	28918.67	444132.1
July	21305.63	378858.6
August	16952.19	338811.6
September	19994.27	355353.6
October	9815.658	135397.4
November	0	0
December	0	0
Totals:	**339934.5**	**4461830.3**

CGP Average: 0.0762 lb NOx/MMBtu